

## TITLE

### TAP DANCING SHOE WITH SHOCK ABSORBING CUSHION

#### 5 CROSS REFERENCE TO RELATED APPLICATION

This application claims the benefit of United States Provisional Application No. 60/474,565, filed May 30, 2003, the disclosure of which is incorporated herein by reference.

#### 10 BACKGROUND OF THE INVENTION

This invention relates in general to shoes and, in particular, to an improved structure for a tap dancing shoe that has one or more shock absorbing cushions provided therein.

A tap dancing shoe is a specialized type of shoe that is commonly worn by  
15 dancers and other entertainers. A typical tap dancing shoe includes an upper, a sole that is connected to the upper and has a bottom surface, and a pair of taps that are secured to the bottom surface of the sole. A dancer that wears a tap dancing shoe can manipulate his or her foot in such a manner as to cause the taps on the bottom surface of the sole to engage a dance floor in a rhythmic manner, thereby generating a series of  
20 rhythmic tapping sounds.

Many dancers spend a substantial amount of time wearing tap dancing shoes of the general type described above. For example, a professional tap dancer may perform as many as eight shows per week. Coupled with daily rehearsals or classes, some dancers may wear tap dancing shoes as much as twenty four hours per week. Thus, it  
25 can be seen that the art of tap dancing can result in a substantial amount of repetitive forces being applied to the foot of the dancer. These repetitive forces can cause shocks to be applied to the foot of the dancer that can lead to injuries over a period of time. In particular, dancers wearing tap dancing shoes often exert relatively large amounts of force on the front and heel portions of their feet in order to make the  
30 desired tap dancing sounds. Over a period of time, these forces can lead to injuries to

the feet, knees, or the overall leg of the dancer, such as metatarsalgia or Osgood-Schlatter's disease.

Different tap dancing styles generally require different types of tap dancing shoes. For example, tap dancers who perform athletic or free form tap dancing routines may use a flexible soled shoe that gives the dancer the ability to point, flex, or stand on his or her toes. However, in theatrical chorus or revue style tap dancing routines, such as Broadway musical productions, a uniformly rigid soled formal tap dancing shoe containing a heel is often required. Currently, formal tap dancing shoes of this type are not provided with any shock absorbing cushioning in the soles thereof. While it is known to provide a relatively small cushioned sole in some jazz or flexible shoes, such jazz shoes differ in structure and manner of use from formal tap dancing shoes. Similarly, athletic shoes, such as running shoes, are often provided with a shock absorbing cushioning, but such athletic shoes also differ in structure and manner of use from tap dancing shoes. Thus, it would be desirable to provide an improved structure for a tap dancing shoe that has one or more shock absorbing cushions provided therein in order to reduce the magnitudes of the repetitive stresses that can be applied to the feet, knees, and the overall legs of a dancer during tap dancing.

## SUMMARY OF THE INVENTION

This invention relates an improved structure for a tap dancing shoe that has one or more shock absorbing cushions provided therein in order to reduce the magnitudes of the repetitive stresses that can be applied to the feet, knees, and the overall legs of a dancer during tap dancing. The improved tap dancing shoe includes a shoe upper that can be fabricated from a variety of materials to provide dancers with a tap dancing shoe that is available in a variety of colors and patterns. The shoe upper is attached to a rigid sole such that the shoe upper and the top surface of the sole create a shoe cavity to encase the foot of the dancer. The width of the shoe cavity may be adjusted by an adjustable portion of the shoe upper, such as a strap and buckle, to insure that the tap dancing shoe fits securely on the foot of the dancer. A rigid heel is attached to the sole

of the tap dancing shoe. The shoe upper of the tap dancing shoe may be designed in any size and shape to resemble a woman's, man's, or children's tap dancing shoe, with the sole and heel of the tap dancing shoe sized accordingly. Tap plates are then secured to the sole of the tap dancing shoes. A shock absorbing cushion is permanently affixed to the full length of the sole of the tap dancing shoe within the shoe cavity. The shock absorbing cushion contains one or more layers of a cushioning material arranged such that the shock absorbing cushion is thicker at the front of the tap dancing shoe, corresponding to the placement of the front tap plate, than at the rear portion of the tap dancing shoe.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a tap dancing shoe having a shock absorbing cushion in accordance with this invention.

Fig. 2 is a top plan view of the tap dancing shoe illustrated in Fig. 1.

Fig. 3 is a bottom plan view of the tap dancing shoe illustrated in Fig. 1.

Fig. 4 is a perspective view of the shock absorbing cushion of the tap dancing shoe illustrated in Figs. 1, 2, and 3.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, there is illustrated in Figs. 1 through 3 a tap dancing shoe, indicated generally at 10, that includes a shock absorbing cushion, indicated generally at 12, in accordance with the invention. The tap dancing shoe 10 can be made in all sizes for adults and children. The illustrated tap dancing shoe 10 is a woman's shoe, but the tap dancing shoe of this invention can alternatively be a man's shoe or a children's shoe. The tap dancing shoe 10 includes a shoe upper 14 that is made from any suitable material. Preferably, the shoe upper 14 is formed from a soft leather material. However, however other materials, such as synthetic leather material, dyeable fabric, or plastic material, may also be used. The use of alternate materials for the shoe upper 14, such as dyeable fabrics, synthetic, or plastic materials, allows the

shoe upper 14 of the tap dancing shoe 10 to be made in many different colors and patterns. As commercial tap dancing shoes are generally only available in black, tan, and white, the tap dancing shoe 10 of this invention provides a particular advantage in that the tap dancing shoe 10 may be color coordinated to the costume of the dancer.

5 The shoe upper 14 may include a conventional adjusting mechanism, such as a strap 16 and a buckle 18, to adjust the effective size of the shoe upper 14 to a particular user of the tap dancing shoe 10. Other conventional adjusting mechanisms can include laces, adjustable elastic bands, or Velcro<sup>®</sup> fasteners.

The tap dancing shoe 10 also includes a sole, indicated generally at 20. The  
10 sole 20 includes a front portion 20a, a rear portion 20b, a top surface 21, and a bottom surface 22. The sole 20 can be formed from any suitable rigid material, such as hard leather or a synthetic material. The shoe upper 14 can be secured to the top surface 21 of the sole 20 by any suitable means, such as by sewing or adhesive. When secured together, the shoe upper 14 and the sole 20 define a shoe cavity, indicated generally at  
15 23, that is adapted to receive a foot of the dancer or other user of the shoe 10 therein. The sole 20 may vary in width, both along the length of the front portion 20a of the sole 20 and the length of the rear portion 20b of the sole 20. Also, the sole 20 may vary in width along the length of the shoe upper 14. However, the front portion 20a of the sole 20 should preferably be sufficiently wide as to receive a front tap plate 24  
20 thereon, and the rear portion 20b of the sole 20 should preferably be sufficiently wide as to receive a heel 25 thereon. The heel 25 is attached to the bottom surface of the rear portion 20b of the sole 20, which is located at or near the rear of the tap dancing shoe 10. The heel 25 may be made from any suitable rigid material. Examples of suitable heel materials include, but are not limited to, wood, plastic, and hard leather.  
25 The heel 25 may be of any desired height, depending upon the type of the tap dancing shoe 10 (i.e., woman's shoe, man's shoe, or children's shoe). The bottom of the heel 25 is preferably sufficiently wide as to allow a rear tap plate 26 to be secured to the bottom of the heel 22. If desired, a heel support 25a can extend between the sole 20 of the tap dancing shoe 10 and the sole 20, although such is not required. The heel

support 25a can be embodied as an L-shaped piece of metal that connects the sole 20 to the heel 22 so as to provide additional support.

As mentioned above, the front tap plate 24 is attached to the bottom surface of the front portion 20a of the sole 20, and the rear tap plate 26 is attached to the bottom surface of the heel 25. The front and rear tap plates 24 and 26 can be attached by any suitable means, such as by a plurality of screws 28. The front and rear tap plates 24 and 26 can be formed from any suitable material. Preferably, the front and rear tap plates 24 and 26 are formed from a hard metallic material, such as steel. If desired, a piece of non-slip material 30 may also be attached to the bottom surface of the sole 20 behind the front tap plate 24 to prevent undesirable slipping of the tap dancing shoe 10 on the dance floor. The piece of non-slip material 30 may be formed from rubber or any other suitable non-slip material and can be attached to the sole 20 by adhesive or other suitable means. One example of a suitable piece of non-slip material 30 is commercially available under the registered trademark "Cat's Paw"®.

As mentioned above, the tap dancing shoe 10 of this invention also includes a shock absorbing cushion 12. The shock absorbing cushion 12 is positioned inside the full length of the tap dancing shoe 10, within the shoe cavity 23. The shock absorbing cushion 12 is permanently fastened to the top surface 21 of the sole 20, which prevents the shock absorbing cushion 12 from slipping within the tap dancing shoe 10 during use. The shock absorbing cushion 12 can be fastened to the sole 20 using any suitable means, such as by sewing or adhesive. The shock absorbing cushion 12 may be formed from any material or combination of materials that is suitable for providing cushioning to the foot of the dancer. For example, the shock absorbing cushion 12 may be made from the same type of shock absorbing cushioning material that is currently used in athletic shoes. The shock absorbing cushion 12 may also be constructed using multiple layers of cushioning material that are bonded together by any suitable means, such as adhesive, although such is not required.

The structure of the shock absorbing cushion 12 is shown in Fig. 4. As shown therein, the shock absorbing cushion 12 can include a ball portion 12a, which is

located at the front of the tap dancing shoe 10 adjacent to the front tap plate 24. The ball portion 12a of the shock absorbing cushion 12 may contain a thicker layer or more layers of the shock absorbing material than elsewhere throughout the shock absorbing cushion 12. In the illustrated embodiment, the shock absorbing cushion 12 is

5 constructed with a bottom layer 32, which can be formed from a foamed polymeric material that has a relatively thicker portion at the ball portion 12a, and a top layer 34, which can be formed from a textured fabric material. The top and bottom layers 32 and 34 are fastened together by adhesive or other suitable means. By providing the permanently affixed shock absorbing cushion 12 within the tap dancing shoe 10, the  
10 dancer is able to reduce the risk of repetitive motion injury by having proper, fixed cushioning at both the heel 22 and the front portion 20a of the tap dancing shoe 10.

In accordance with the provisions of the patent statutes, the principle and mode of operation of this invention have been explained and illustrated in its preferred embodiment. However, it must be understood that this invention may be practiced  
15 otherwise than as specifically explained and illustrated without departing from its spirit or scope.